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10/629,939	07/29/2003	Kalpana Shyam	SVL920020093US1	9038

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EXAMINER

HARPER, LEON JONATHAN

ART UNIT	PAPER NUMBER
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2166

NOTIFICATION DATE	DELIVERY MODE
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10/31/2008

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

krvuspto@ipmatters.com

Office Action Summary	Application No. 10/629,939	Applicant(s) SHYAM ET AL.	
	Examiner Leon J. Harper	Art Unit 2166	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 July 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-12,31 and 32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-12,31-32 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. The amendment filed 7/31/2008 has been entered. Claims 1 13-30 and 33-36 have been amended. Claims 2, 13-30 and 33-36 have been cancelled. No claims have been added. Accordingly, claims 1, 3-12, and 31-32 are pending in this office action.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1, 3-12 and 31-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 5551027 (hereinafter Choy) in view of US 20020032678 (hereinafter Cornwell) and in further view of Linux Man page for fetch (hereinafter SGI).

As for claim 1 Choy discloses: wherein rows of the base table are stored in table partitions and wherein there is one index partition for each determined table partition (See column 7 lines 42-46), wherein each index partition includes nodes, wherein each node in each index partition includes at least one key column value from a corresponding table row in the table partition associated with the index partition and a location identifier identifying the corresponding table row in the corresponding table partition (See column 7 lines 19-29 and column 7 lines 38-40); determining a set of nodes, one from each index partition, whose key column value satisfies the query predicate (See column 11 lines 24-27), Ordering the set of determined nodes from the index partitions (See column 1 lines 45-55) selecting one node from the ordered set based on a position of the node in the ordering ; and returning data from the table row identified by the location identifier in the selected node (See column 11 lines 43-47).

Choy however, does not explicitly disclose receiving a fetch request to fetch data from a base table that satisfies a query predicate, and in response to the fetch request. Comparing a direction indicated in the fetch request and an ordering of the index partitions; setting a fetch direction based on a result of the comparison of the direction indicated in the fetch request and the ordering of the index partitions; and scanning the index partitions in the fetch direction. Cornwell however, does disclose receiving a fetch request to fetch data from a base table that satisfies a query predicate (See paragraph 0087), Comparing a direction indicated in the fetch request and an ordering of the index partitions (See paragraphs 0009, 0010, 0013 0044) ; setting a fetch direction based on

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a result of the comparison of the direction indicated in the fetch request and the ordering of the index partitions; and scanning the index partitions in the fetch direction (See paragraphs 0057, 0077, 0099-0100). SGI also discloses fetch request both receiving and responding to (See SGI page 2). It would have been obvious to an artisan of ordinary skill in the pertinent art at the time the invention was made to have incorporated the teaching of Cornwell and SGI into the system of Choy. The modification would have been obvious because the two references are concerned with the solution to the problem of query processing, therefore there is an implicit motivation to combine these references. In other words, the ordinary skilled artisan, during his/her quest for a solution to the cited problem, would look to the cited references at the time the invention was made. Consequently, the ordinary skilled artisan, would have been motivated to combine the cited references since Cornwell's and SGI teaching would enable users of the Cornwell system to handle fetch requests and searching more efficiently (See Choy column 2 lines 55-59).

As for claim 3 the rejection of claim 2 is incorporated, and further Cornwell discloses: wherein the fetch direction is set opposite the direction indicated in the fetch request direction indicated in the fetch request is opposite the ordering of the index partitions (See paragraph 0099).

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As for claim 4 the rejection of claim 2 is incorporated, and further Cornwell discloses: setting the fetch direction to backward if the fetch direction is backward and the fetch direction is not opposite the ordering of the index partitions or if the fetch direction is forward and the fetch direction is opposite the ordering of the index partitions, and setting the fetch direction to forward if the fetch direction is backward and the fetch direction is opposite index the ordering of the index partitions or if the fetch direction is forward and the fetch direction is not opposite the ordering of the index partitions (See paragraph 0099).

As for claim 5 the rejection of claim 1 is incorporated, and further Cornwell discloses: if the fetch request is a first fetch of the fetch request, then selecting one node starting from one of: a lowest key value from each index partition if the fetch direction is forward or highest key value from each index partition if the fetch direction is backward (See paragraph 0087).

As for claim 6 the rejection of claim 1 is incorporated, and further Cornwell discloses: if the fetch request is not a first fetch of the fetch request, then determining whether the fetch direction in which the index partitions are scanned for a previous fetch request is a same direction as the direction indicated in a current fetch request, wherein the direction indicated in the fetch request is capable of having been modified (See paragraph 0098); and if the fetch direction for the previous fetch request and direction indicated in the current fetch request are different, then discarding all saved nodes for

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the index partitions and selecting one node from a last selected node (See paragraph 0095).

As for claim 7 the rejection of claim 6 is incorporated, and further Cornwell discloses: if the previous and current directions are the same, then scanning in the direction of the fetch request from the previously saved node in each index partition (See paragraph 0096).

As for claim 8 the rejection of claim 1 is incorporated, and further Cornwell discloses: receiving a subsequent fetch request to fetch data from the base table (See paragraph 0094), replacing a previously selected node selected in a previous fetch request in the set with one node in the index partition including the previously selected node whose key column value satisfies the query predicate to form a modified set; selecting one node from the modified set; and returning the table row identified by the location identifier in the node selected from the modified set (See paragraph 0095).

As for claim 9 the rejection of claim 8 is incorporated, and further Cornwell discloses: wherein the subsequent fetch request comprises a fetch relative request to fetch a row that is multiple number of rows from the previously selected node (See paragraph 0095 “cursor is set to a number of rows”), further comprising: performing the steps of replacing the previously selected node and selecting one node multiple number

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of times to determine the selected node to return to the fetch relative request to satisfy a fetch quantity (See paragraph 0095).

As for claim 10 the rejection of claim 8 is incorporated, and further Cornwell discloses: wherein the subsequent fetch request comprises a fetch absolute request to fetch a row that is multiple number of rows from one end of the table (See first two lines of paragraph 0099), further comprising: determining a new set of nodes, one from each index partition, by scanning from one end of the index partitions for a first node whose key column value satisfies the query predicate and whose key column value is greater than the previously selected node if fetching forward and the key is less than the previously selected node if fetching backward', performing the steps of replacing the previously selected node and selecting one node a number of times that is one less than the number of rows indicated in the fetch absolute request to determine the selected node to return to the fetch relative request; and performing the steps of replacing the previously selected node and selecting one node the multiple number of times to determine the selected node to return to the fetch relative request (See paragraph 0099).

As for claim 11 the rejection of claim 1 is incorporated, and further Choy discloses: determining a new set of nodes from each index partition; and caching the determined new set of nodes when performing the fetch operation (See column 8 line 65- column 9 line 6).

Choy however, does not explicitly disclose: discarding the cached keys if the fetch request is in an opposite direction of a previous fetch request; Cornwell however does disclose: discarding the cached keys if the fetch request is in an opposite direction of a previous fetch request (See paragraph 0097 and the movement of the cursor).

As for claim 12 the rejection of claim 11 is incorporated, and further Cornwell discloses: processing the fetch request to determine set of nodes in the backward direction in the previous fetch request (See paragraph 0095 “setting $I = I-j$ ”); inverting the keys and sorting the inverted keys; and selecting the one node containing the lowest inverted key to return (See last 5 lines of paragraph 0095).

As for claim 31 the rejection of claim 1 is incorporated and further Cornwell discloses: determining whether the key value of the selected node from the ordered set satisfies the query predicate; and selecting a next node from the ordered set following the selected node that does not satisfy the query predicate (See paragraph 0087)..

As for claim 32 the rejection of claim 1 is incorporated and further Cornwell discloses: wherein determining the set of nodes from the index partitions comprises executing parallel tasks to process the index partitions (See paragraph 0087)..

Response to Arguments

Applicant's arguments filed 7/31/2008 have been fully considered but they are not persuasive.

Applicant argues:

Nowhere do the cited col. 11 or other cited parts of Choy teach or suggest comparing a direction indicated in the fetch request and an ordering of the index partitions, setting a fetch direction based on a result of the comparison of the direction indicated in the fetch request and the ordering of the index partitions, and then scanning the index partitions in the fetch direction to determine index nodes satisfying the query. Instead, the cited Choy discusses processing a global index table to determine partitions (PIDs) having key values satisfying the query and then sending the queries to the local indexes to handle. For instance, the Examiner has not cited any part of Choy that teaches comparing the direction indicated in the fetch or query request and the ordering of the local indexes of Choy to determine a direction in which the indexes are scanned for matching entries.

Examiner responds:

Examiner is not persuaded. Examiner is entitled to give claim limitations their broadest reasonable interpretation in light of the specification. Interpretation of Claims- Broadest Reasonable Interpretation: During patent examination, the pending claims must be 'given the broadest reasonable interpretation consistent with the specification.' Applicant always has the opportunity to amend the claims during prosecution and broad interpretation by the examiner reduces the possibility that the claim, once issued, will be

interpreted more broadly than is justified. In re Prater, 162 USPQ 541,550-51 (CCPA 1969). In this case the fetch direction must be set based on a comparison and Cornwell discloses both fetching forward and fetching backward as a matter or choice (See paragraphs 0093,0099, and 0094).

Applicant argues:

The Examiner cited col. 11, lines 43-47 of Choy as teaching the claim requirement of selecting one node from the ordered set based on a position of the node in the ordering. (Third Office Action, p. 3). The cited col. 11 discusses how each node having a local index may use a different query evaluation plan to evaluate the query. Nowhere does this teach or suggest selecting one node from an ordered set, where the ordered set comprises a set of nodes comprising entries in index partitions that satisfy the query predicate. Moreover, the cited "nodes" of Choy are different than the claimed nodes because the cited nodes of Choy comprise a computational node having a local index (see, Choy, col. 4, line 66 to col. 5, line 5, col. 5, line 58-62) on which a query is performed, whereas the claimed nodes comprise nodes in from different index partitions that have a key column value identifying a corresponding table row in the corresponding table partition.

Examiner responds:

Examiner is not persuaded. Examiner is entitled to give claim limitations their broadest reasonable interpretation in light of the specification. Interpretation of Claims- Broadest Reasonable Interpretation: During patent examination, the pending claims must be 'given the broadest reasonable interpretation consistent with the specification.' Applicant always has the opportunity to amend the claims during prosecution and broad

interpretation by the examiner reduces the possibility that the claim, once issued, will be interpreted more broadly than is justified. In re Prater, 162 USPQ 541,550-51 (CCPA 1969). In this case it is not necessarily the content of the node but how the combined system deals with the node that discloses the claimed invention.

Applicant argues:

Moreover, Applicants submit that there is still no teaching of using the claimed index partitions to determine qualifying nodes for a fetch request as claimed. The Examiner cited col. 2, lines 55-59 of Choy as providing the motivation to modify the index partitioning scheme of Choy to be applied to processing fetch requests. (Third Office Action, pg. 4) The cited col. 2 mentions that indexes are maintained on a search field to provide search efficiency. Applicants submit that although indexes provide search efficiency, there is no teaching or suggestion here that the particular described index scheme of Choy be used for fetch requests or perform the searching of the index partitions as claimed. For instance, there is no suggestion or motivation to use with search requests the claimed indexing scheme of one index partition for each determined table partition, comparing the direction indicated in the fetch request with the ordering the index partitions.

Examiner responds:

Examiner is not persuaded. In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally

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available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case the modification would have been obvious because the two references are concerned with the solution to problem of query processing, therefore there is an implicit motivation to combine these references. In other words, the ordinary skilled artisan, during his/her quest for a solution to the cited problem, would look to the cited references at the time the invention was made. Consequently, the ordinary skilled artisan, would have been motivated to combine the cited references since Cornwell's and SGI teaching would enable user's of the Cornwell system to handle fetch request and searching more efficiently (See Choy column 2 lines 55-59).

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leon J. Harper whose telephone number is 571-272-0759. The examiner can normally be reached on 7:30AM - 4:00Pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hosain T. Alam can be reached on 571-272-3978. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

LJH
Leon J. Harper
October 25, 2008

/Hosain T Alam/
Supervisory Patent Examiner, Art Unit 2166